LCS CONOPS

Backup Slides

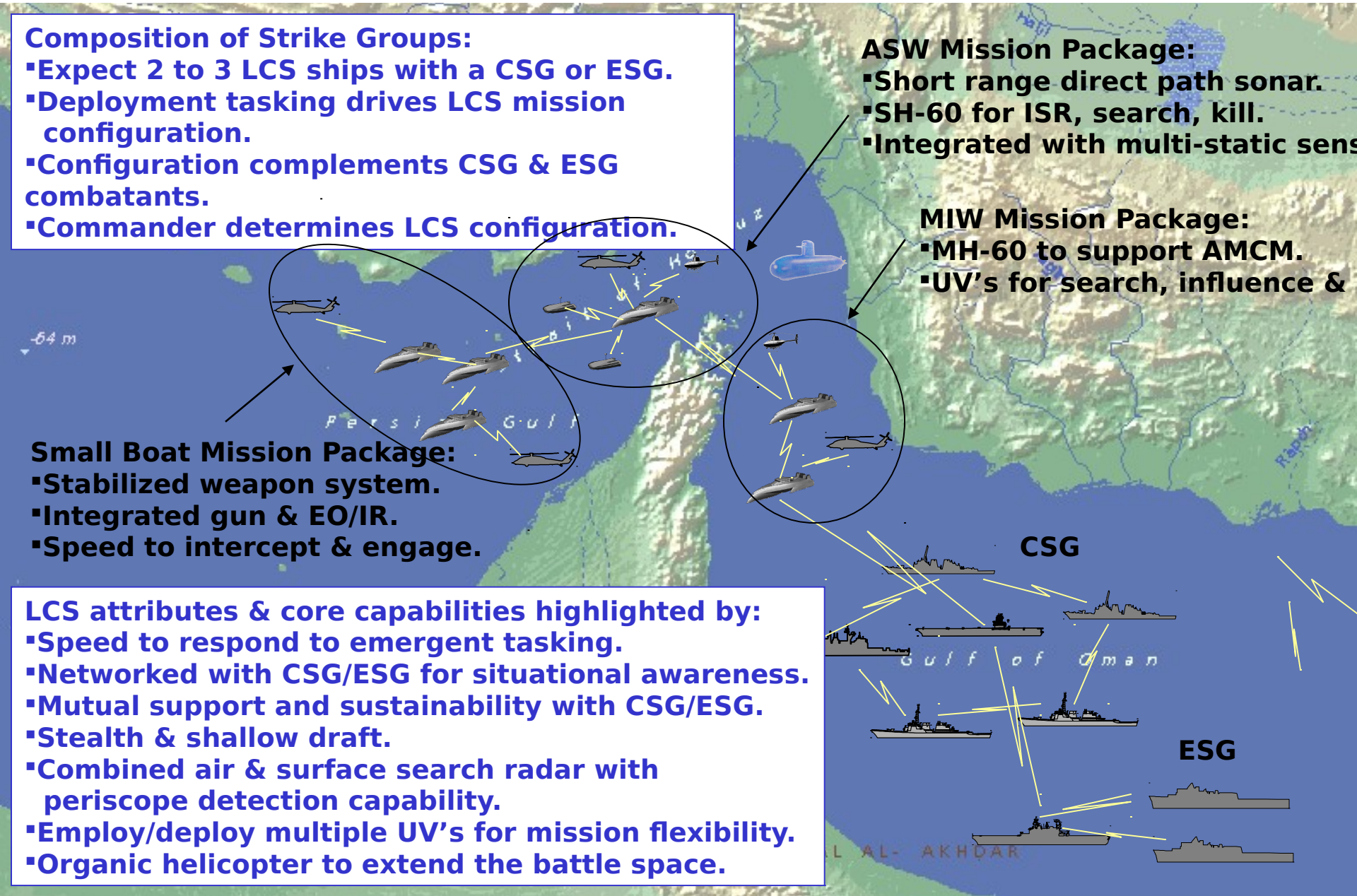
CSG/ESG Operations

Composition of Strike Groups:
- Expect 2 to 3 LCS ships with a CSG or ESG.
- Deployment tasking drives LCS mission configuration.
- Configuration complements CSG & ESG combatants.
- Commander determines LCS configuration.

ASW Mission Package:
- Short range direct path sonar.
- SH-60 for ISR, search, kill.
- Integrated with multi-static sens

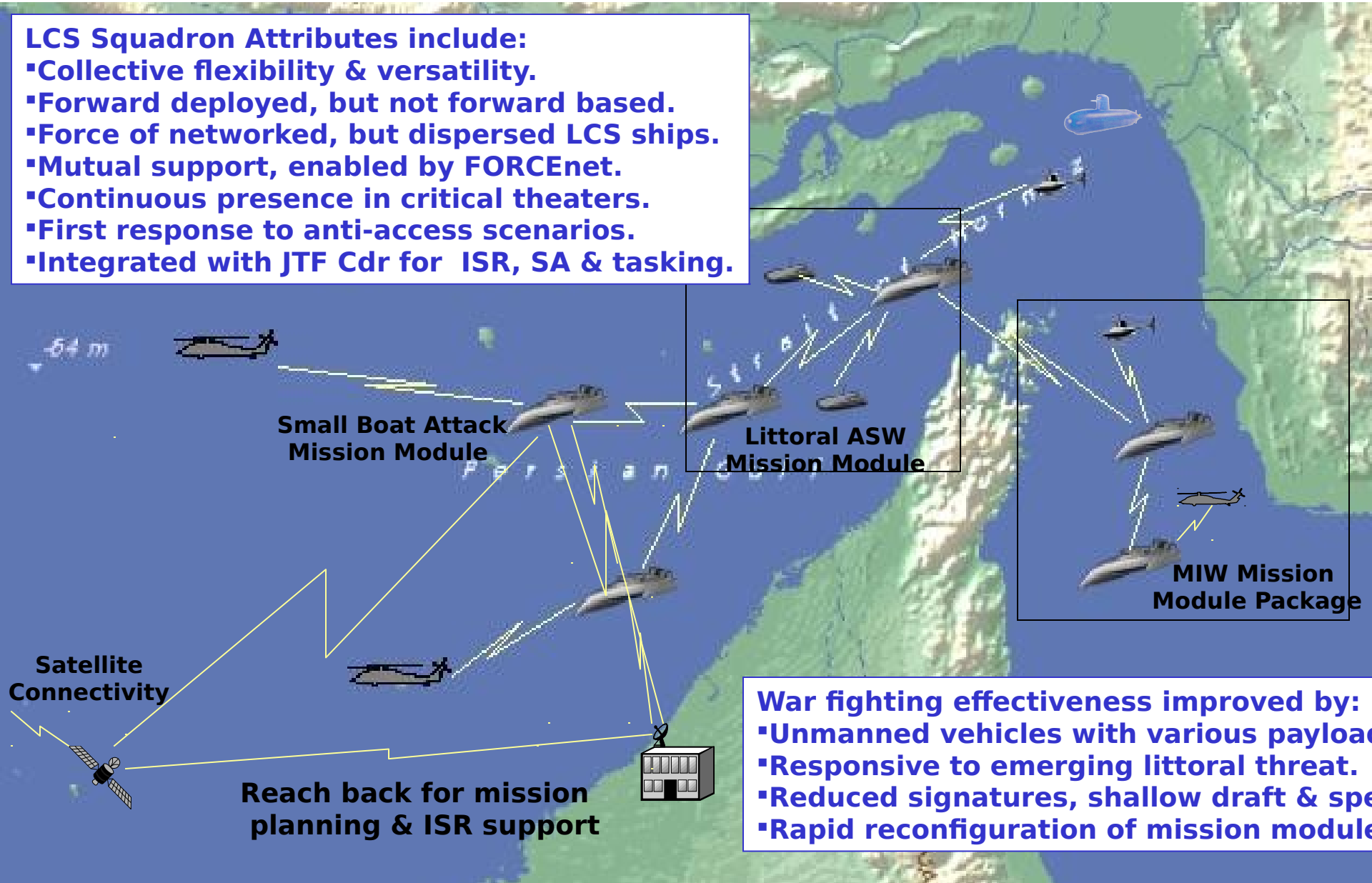
MIW Mission Package:
- MH-60 to support AMCM.
- UV's for search, influence &

Small Boat Mission Package:
- Stabilized weapon system.
- Integrated gun & EO/IR.
- Speed to intercept & engage.

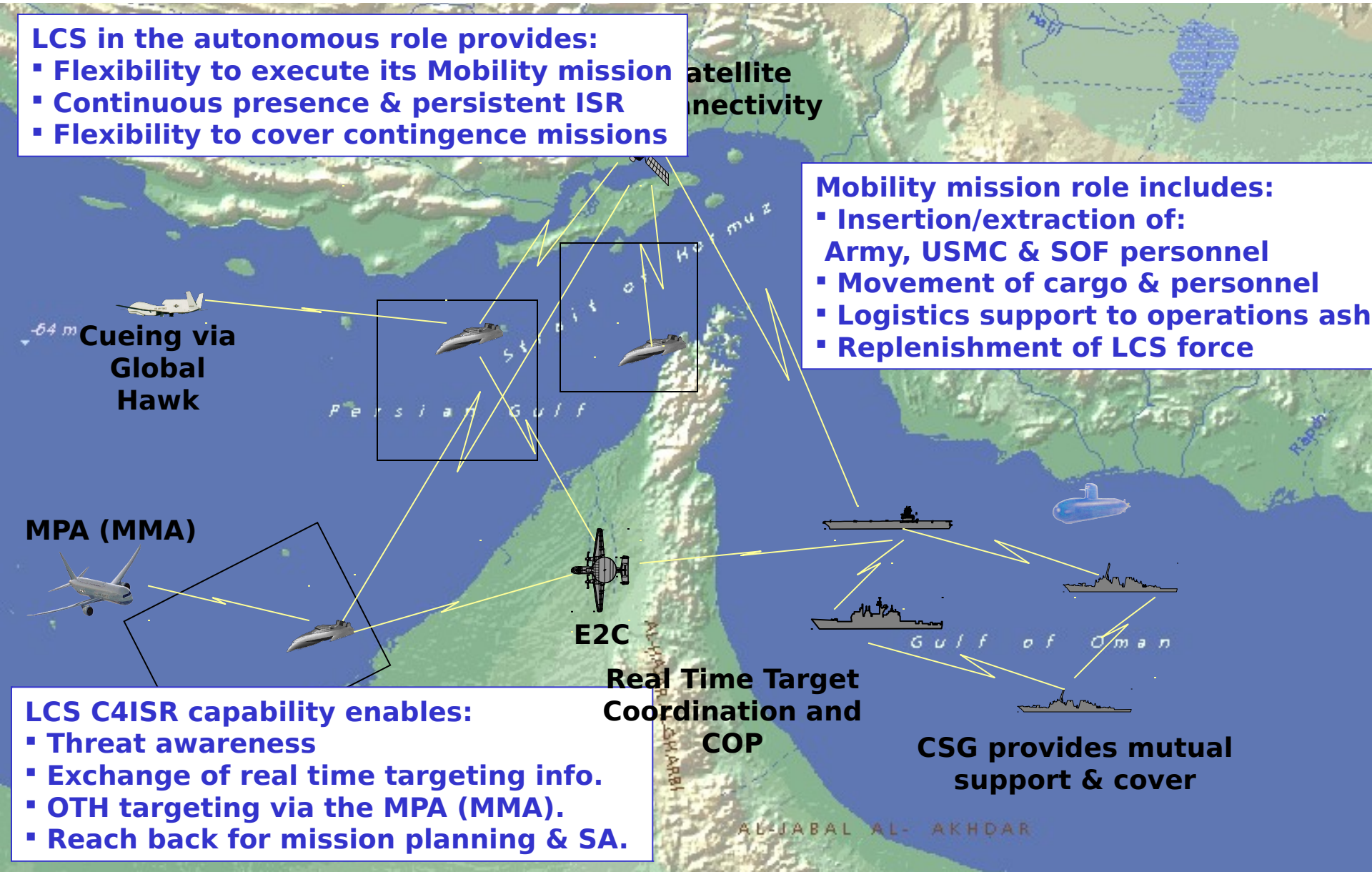


LCS attributes & core capabilities highlighted by:
- Speed to respond to emergent tasking.
- Networked with CSG/ESG for situational awareness.
- Mutual support and sustainability with CSG/ESG.
- Stealth & shallow draft.
- Combined air & surface search radar with periscope detection capability.
- Employ/deploy multiple UV's for mission flexibility.
- Organic helicopter to extend the battle space.

LCS Squadron Operations



Independent LCS Operations



Core "Sea Frame" Capabilities

Fleet Warfighters say…

- ✓ **Common Hull, Mechanical & Electrical**
- ✓ **Common Mission Module Support Systems (Interfaces)**
- ✓ **Proven Propulsion System**
- ✓ **Sprint Speed 50 Knots**
- ✓ **Alongside replenishment capability**
  - ✓ **Refueling/rearming/stores**
- ✓ **Radars/Sensors**
  - ✓ **Combined air, surface & periscope detection capability**
  - ✓ **Integrated EO/IR capability**
- ✓ **Organic manned helicopter**
- ✓ **Night Vision compatible**
- ✓ **Survivability & signature management**
- ✓ **Shallow draft**
- ✓ **Integrated Comm/CIC**
- ✓ **HSI / automation**
- ✓ **Off board system handling / stowage**

- ✓ **Common architecture (data & displays)**
- ✓ **Multi-modal (Common) work stations**
- ✓ **C4 Capability for on board and reach-back for mission planning & tasking**
- ✓ **Self-defense capability against:**
  - ✓ **Air, surface & subsurface**
  - ✓ **ESM for target correlation & warning**
  - ✓ **Speed, agility, maneuver, network**
- ✓ **Weapons suite options that include:**
  - ✓ **Stabilized gun & missile systems**
  - ✓ **ASW weapons & decoys**
  - ✓ **Non-lethal options**
- ✓ **Fire control system**
  - ✓ **Integrated with EO/IR sensor**
  - ✓ **Automatic target designation**

LCS Littoral ASW Mission

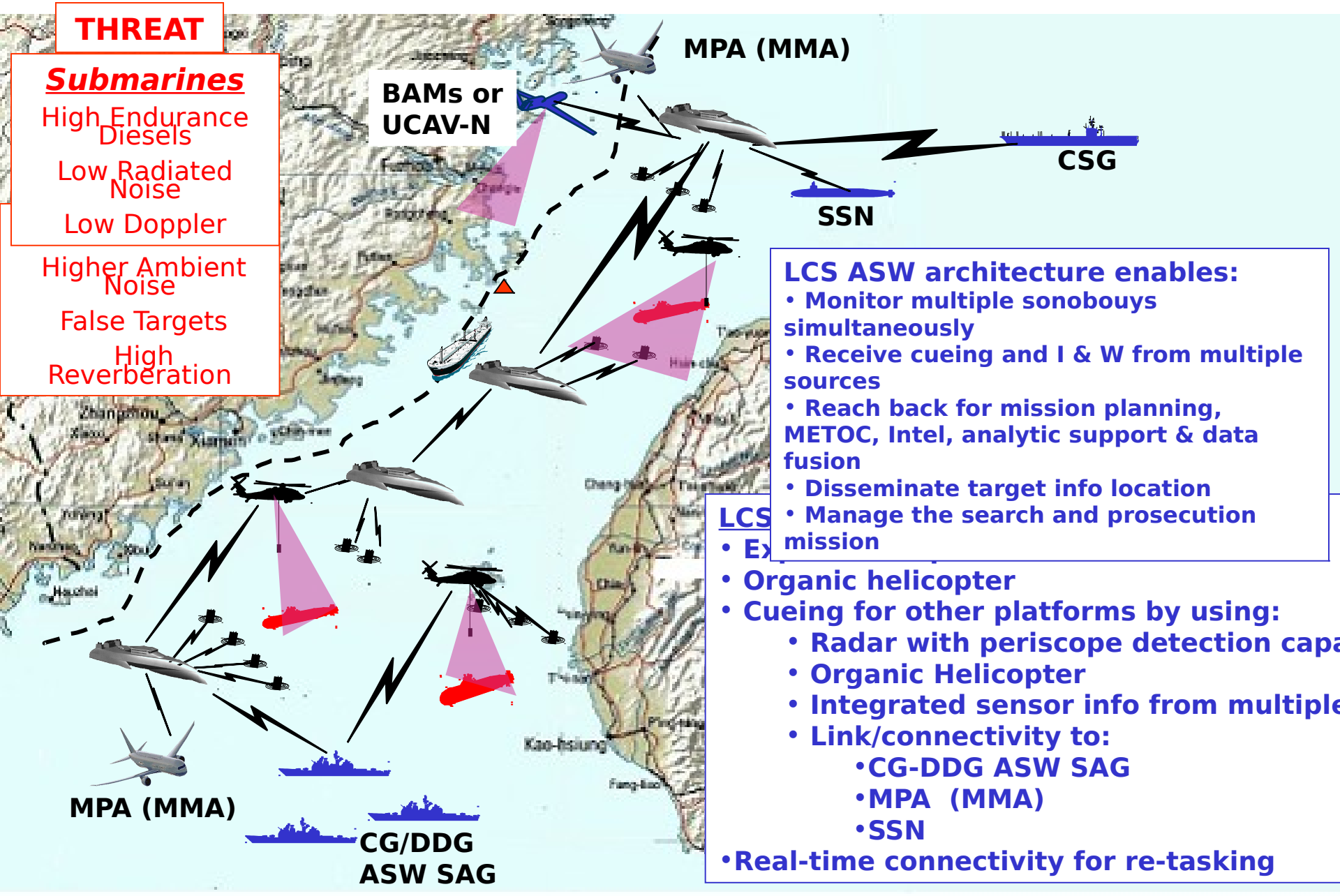
Potential Mission Requirements

- Airborne surveillance and weapons systems
- Towed body, multi-static and non-acoustic sensor(s)
- USVs equipped with:
  - Active/passive sonars
  - Sonobuoys
  - UUVs
  - Torpedoes
- C4ISR allowing LCS to be fully netted with its off-board sensors.
- Organic ASW weapons, and non-lethal systems

Employment

- Lay down USW sensor grid
- ASW prosecution
  - Contested waters
  - Choke points
- Barrier ops/maintain operating area
- Direct support to CSG/ESG
- Create access in concert with other USW sensors and forces (Surface Combatants/MPA/SSN)
- Collateral support to MCM mission
- Common operational picture

Littoral ASW Mission



LCS MIW Mission

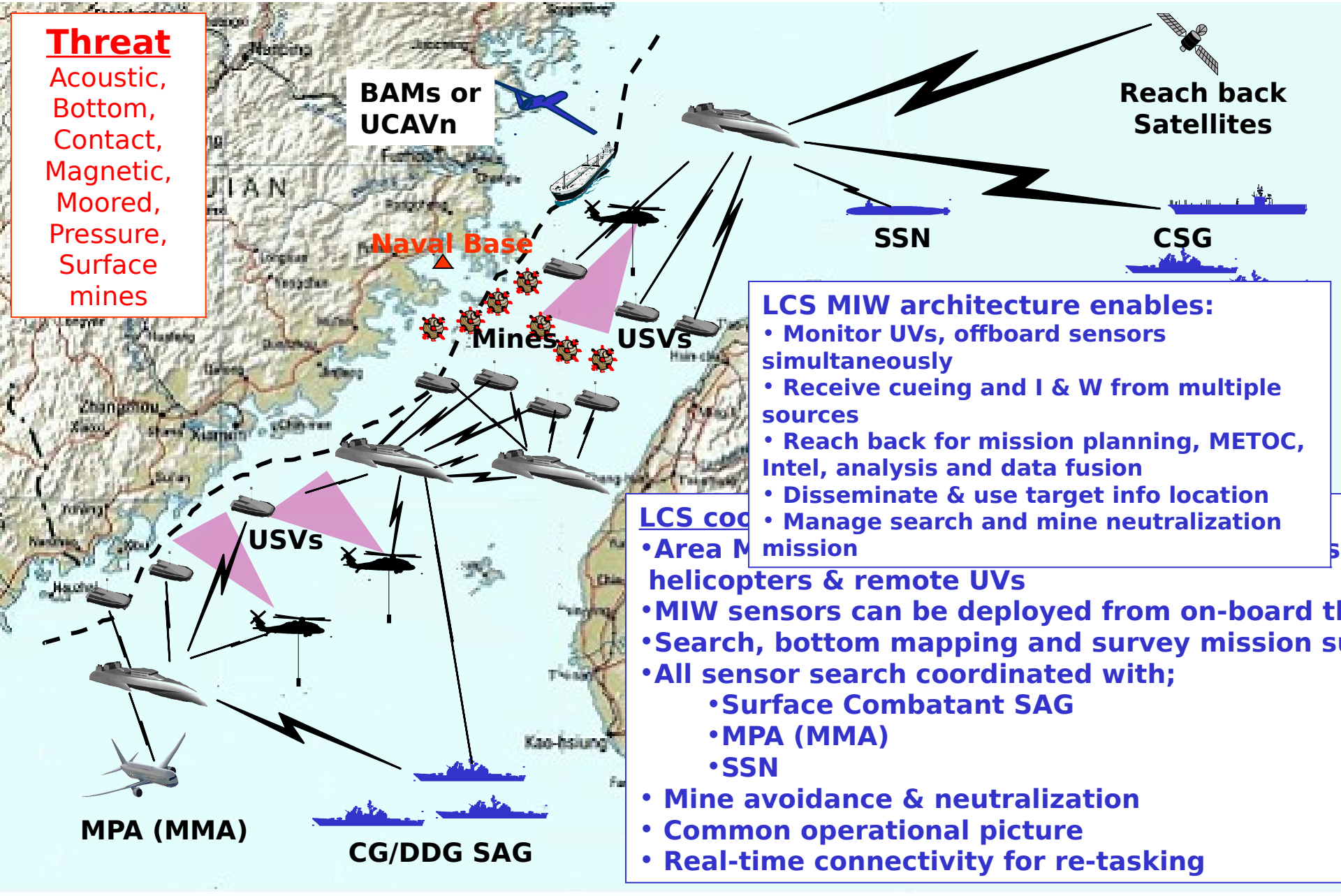
Potential Mission Requirements

- MH60S to support AMCM
- UUVs for search and ID mines and min- like objects
- USVs sensors and influence sweeps for limited neutralization.
- UAVs for ISR and Comm relay.
- Support platform for naval special clearance teams

Employment

- Establish undersea awareness
  - Bottom mapping
  - Q route sanitization
  - Common Undersea Picture (CUP)
- Interdiction of hostile mine layers
  - Coordinated engagement with CSG
  - Use off-board systems to detect mine-laying events
- Use UVs and AMCM for search, map and limited neutralization
  - Flexibility to conduct opposed MCM missions or work with dedicated forces

Littoral MIW Mission



Prosecution of Small Boats

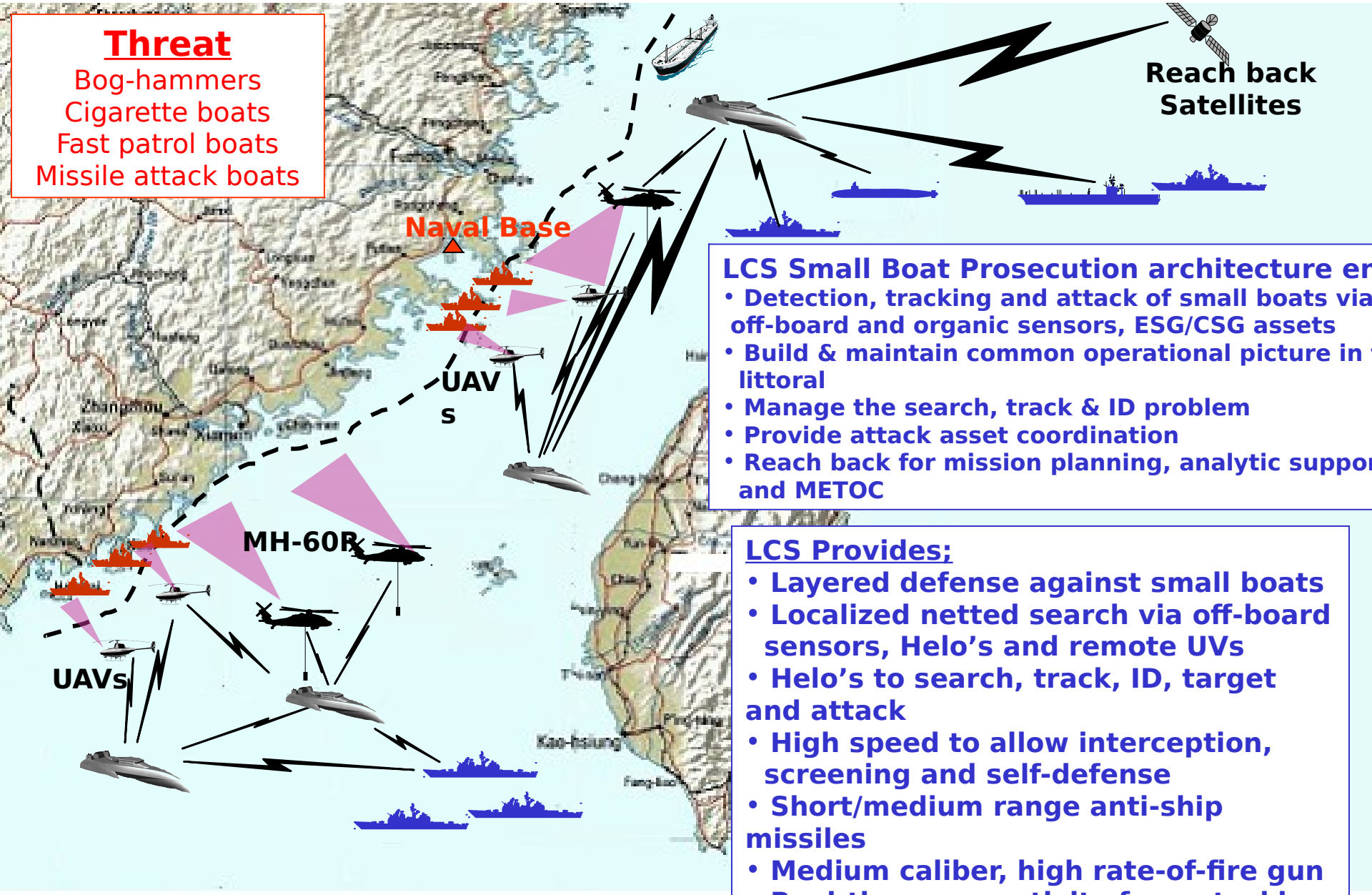
Potential Mission Requirements

- High speed for interception, screening and self defense
- MH-60R with radar and missiles
- UVs with search, track and ID
- UVs to lay sensors, conduct ISR missions and cooperate with Helos for prosecution
- Deployable acoustic and RF sensors to provide early warning
- Weapon system for point defense and area engagement
- Deception

Employment

- LCS/UVs deploy early warning sensors
- Offensive/FP operations in support of Sea Basing
- Helos/UAVs ID & target small boats
- Coordinated operations for interception, deception, distraction, screen and breakup of threat
- Mutual support to LCS MIW/ASW mission taskings
- Operate in support of CSG/ESG in SUW mission role

Counter Small Boat Mission



LCS Mobility Missions

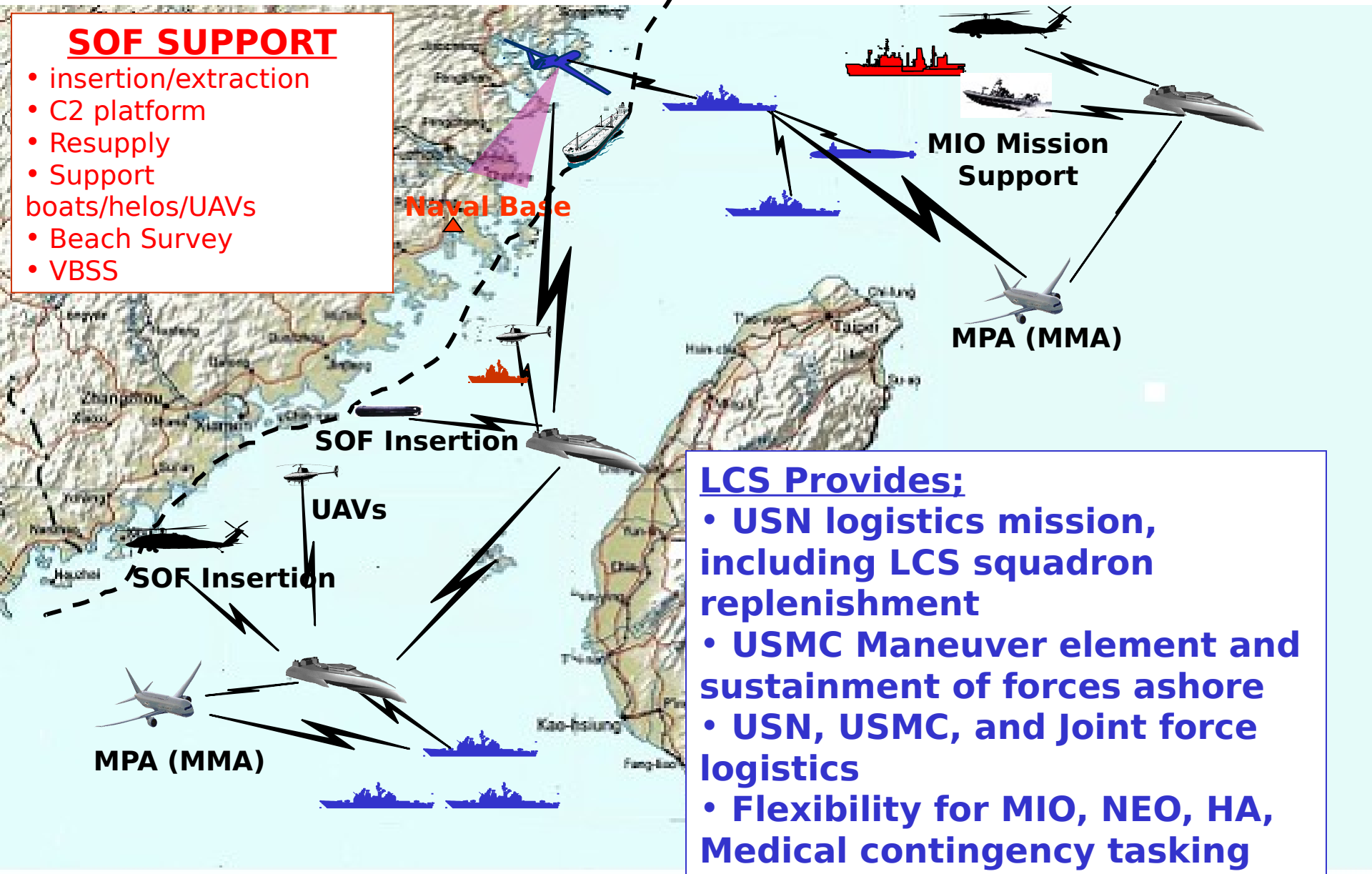
Mission Requirements

- Berthing/storage areas for personnel/weapons/ammo
- Full C4ISR connectivity for planning, briefing, reach back
- Launch/recover/support/ sustain variety of manned and unmanned vehicles
- Day/night helo/UAV operations
- Flexible payload area for:
  - USMC maneuver element
  - USN logistics/replenishment
  - SOF support package
  - MIO package
  - Force Protection package
  - Medical package
  - NEO/HA package

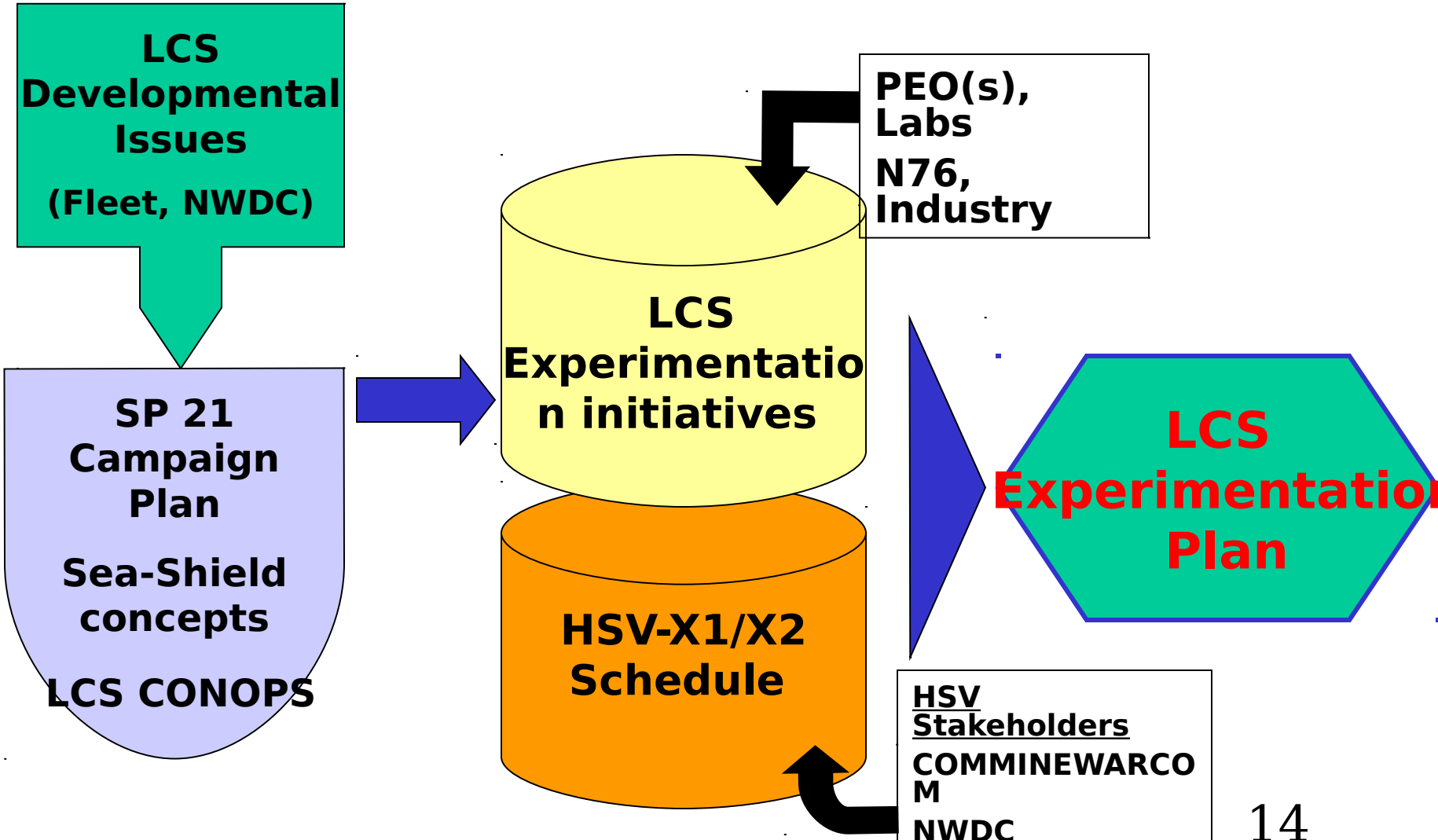
Employment

- Manuever element for USMC STOM
- USN logistics and replenishment
- SOF support missions include insertion, recon, CSAR, resupply, emergency extraction
- Reconfiguration gives flexibility for diverse missions from USMC maneuver element to medical evacuation
- Mission packages include helos, boats and unmanned vehicles necessary for transport, ISR or force protection
- Replenishment of sister ships in LCS squadron

LCS Mobility Mission



LCS Concept-Based Experimentation



CONCEPT-BASED EXPERIMENTATION INITIATIVES FOR LCS

CONCEPTS

Sea Shield

Assured Access

Homeland Defense

Joint Aerospace Defense

Littoral Sea Control

Assured Presence

In-port Force Protection

On-shore Force Protection

To be Developed with USMC

Deploy, manage, exploit, refuel, replace, reposition, recover and redeploy (DMER5) a range of off board and organic systems

Employ modular, flexible mission sensing, weapons and network capabilities

Deploy the associated platforms and network necessary to employ off board systems

Deploy and sustain forces to deny the enemy the ability to gain access to U.S. or allied power projection battlespace.

Deploy forces to conduct covert and clandestine battlespace environmental and operational characterization

Maximize deployment of unmanned systems in assured access operations

Synergize access and power projection forces in creating and sustaining access

Manage forces with an access-centric command and control structure and architecture

Provide analysis and decision aid tools to permit determination of the level of access at a given point,

LCS EXPERIMENTATION INITIATIVES (PARTIAL)

Develop/Evaluate LCS Mission Packages and CONOPS for ASW, MIW, SUW missions

Evaluate LCS/HSV in roles as host platform for experimentation

Evaluate various LCS modular aviation packages to enable LCS missions

Develop/Evaluate LCS Mission Packages and CONOPS for frequently conducted mobility missions.

Conduct vulnerability evaluations examining susceptibility, survivability and recoverability

Determine necessary battlespace environmental characterizations for all LCS missions

Determine LCS capabilities/options re: organic vs. modular sensors and weapons.

Analyze LCS compatibility, interdependence and integration with ESG and CSG across mission areas

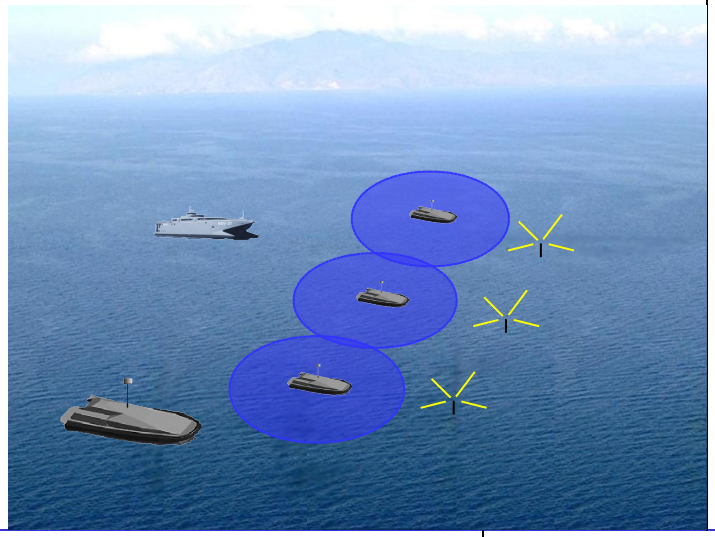
LCS EXPERIMENTAL INITIATIVES

- **PLATFORM ATTRIBUTES**
  - Develop/demonstrate/improve LCS systems/ processes to employ and manage OBS in all mission areas (C-MULT-004/5/7).
  - Conduct LCS vulnerability evaluations (C-MULT-003).
  - Determine the operational and tactical benefits of speed in littoral access and mobility missions (C-MULT-002).
- **FLEET INTEGRATION**
  - Analyze LCS compatibility, interdependence and integration with ESG and CSG across mission areas (G-MULT-002).
  - Determine LCS OPCON/TACON relationships, including new C2 structures at the force level (H-MULT-001).

LCS EXPERIMENTAL INITIATIVES

- **LCS MISSION PACKAGES**
  - Develop/Evaluate LCS Mission Packages and CONOPS for ASW, MIW, SUW AND MOBILITY missions (A-ASW-005/MIW-002/SUW-002/MULT-008).
  - Compare the utilization of seaborne, modular C2 platforms with utilization of purpose-built platforms across all mission areas (B-MULT-002).
- **OFF BOARD SYSTEMS (OBS)**
  - Develop, test, and evaluate OBS Launch and Recovery CONOPS (C-MULT-010).
- **AVIATION CAPABILITY**
  - Evaluate various LCS modular aviation packages to enable LCS missions (A-MULT-002).
- **ORGANIZATIONAL**
  - Evaluate LCS human systems integration to reduce manning required (C-MULT-012).

LCS ASW MISSION PACKAGES / CONOPS



Concept: LCS ASW CONOPS

ID: 01.01.01.XX.XX.XX.XX.XX.01

Level of examination: Operational and Tactical

Base: Operations, Conceptual, Technology

Type(s): Data Gathering, Exploratory, Comparison (Tech only)

Venue(s): Research initially, but all venues must be visited

Associated Technologies: TBD

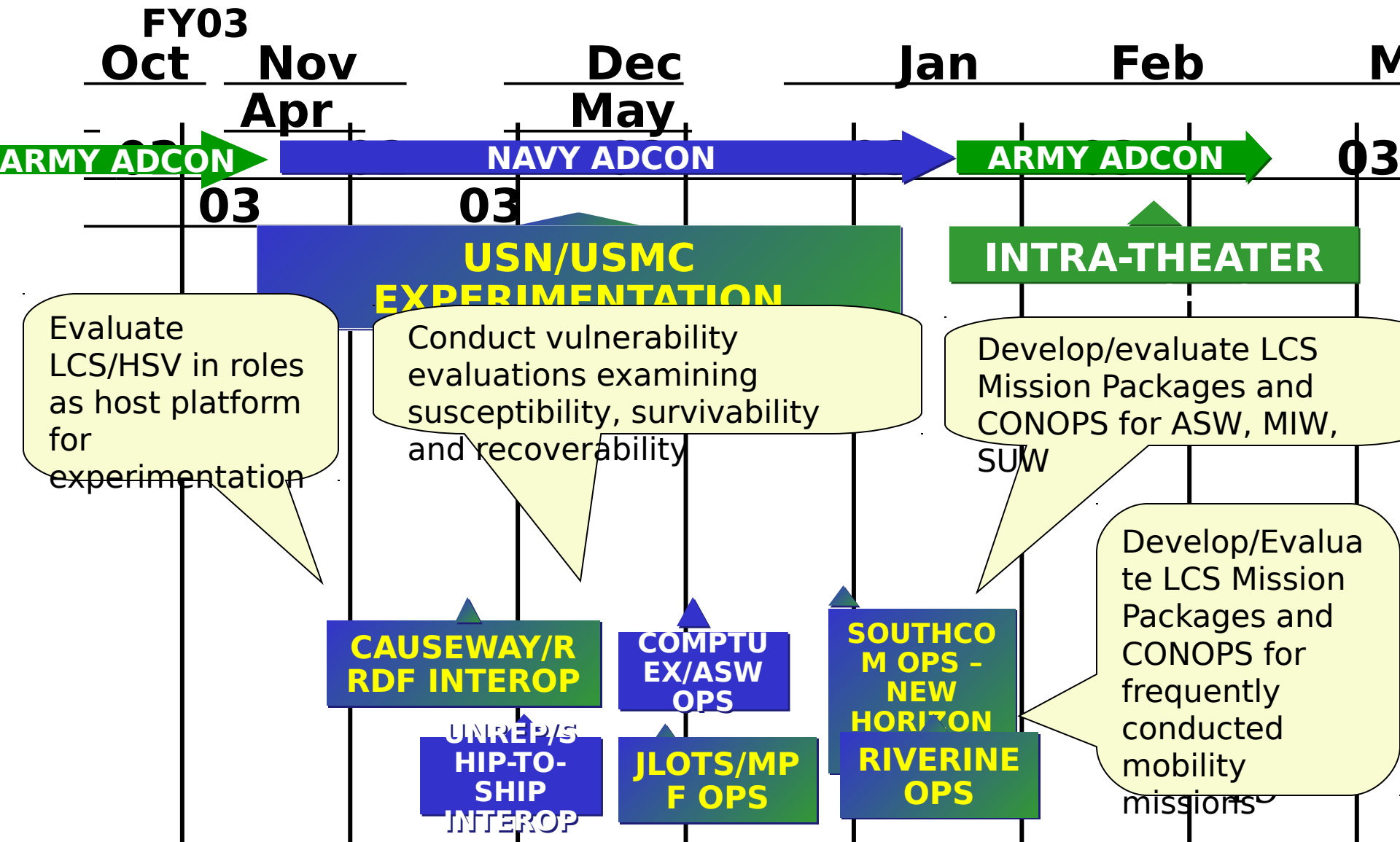
Initiative Description:
Design and evaluate LCS mission packages and CONOPS for ASW
- Deploying and exploiting ASW sensors /arrays
- Network, data and sensor node(s)
- Processing data from distributed sensors / arrays
- ASW UV deployment in the littoral

Operational Focus Areas:
.01 Evaluate the load out maximizing sensors and weapons based upon the threat and desired level of access (area coverage), and desired sustainment
.02 Evaluate LCS platform with other ASW forces
.03 Explore data retrieval, processing, and sharing
Sensor lay down options and water space mgt.

Tactical Focus Areas:
.04 DMER5 procedures, timelines, and tactics for sensor, vehicles, and weapons deployment
.05 Consider technology options that are available and still need to be developed
.06 Autonomous sensor behavior (mobile vs. fixed)
.07 Explore network, data, and sensor nodes

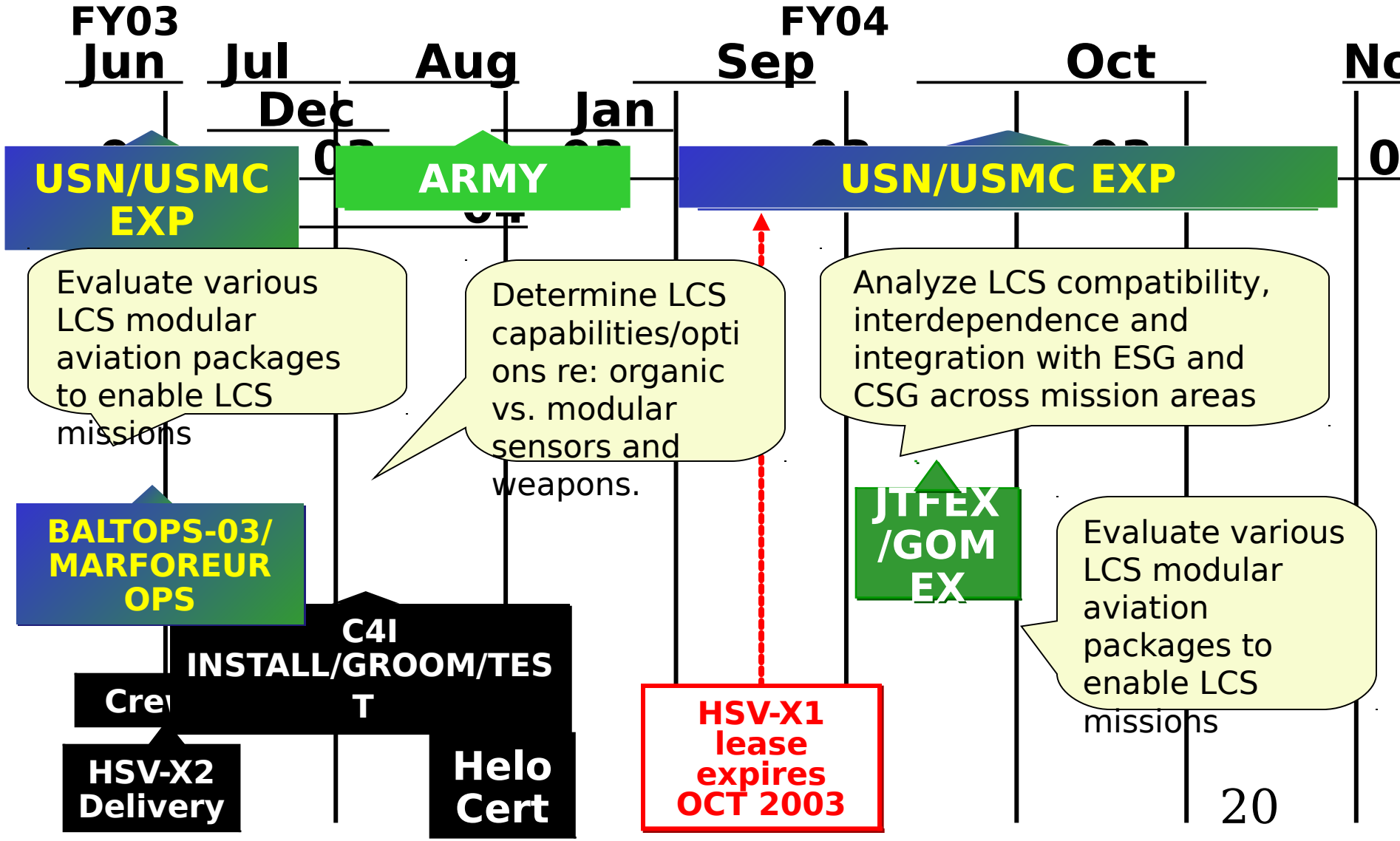
Notional HSV-X1 Schedule

Showing LCS Exp. Initiatives



Notional HSV-X1/X2 Schedule

Showing LCS Exp. Initiatives



Industry Guidance (Core)

- **Self Defense Gun – CIWS Block 1B**
- **Self Defense Missile – RAM**
- **Self Defense Countermeasures – NULKA**
- **Sensors – Advanced Surface/Air Search Radar, Electro Optical Sight System**
- **C^2 – CEC (receive only) and Link 16**
- **Aviation Assets: AH-58D**

Industry Guidance (Core)

System/vehicle	System/Vehicle weight (kg)	System/Vehicle Dimensions	Power Requirements
Weapon Systems			
Mk 15 CIWS Block 1B Gun Mount	6,577	12.2 sq m	73 kW max, 10 kW continuous
CIWS support	877	10.9 sq m	3.0 kW
Mk 31 RAM Guided Missile System Launcher, above deck	5,187	9.6 sq m	35 kW
RAM, below deck	907	1.0 sq m	12.5 kW
Mk 53 Mod 4 Decoy Launch System (4 NULKA-SRBOC & 2 SRBOC launchers)	10,159	14.7 sq m	500 W
Offboard Vehicles, Manned Aviation:			
AH 58D (each folded)	2,359	10.3m x 2.8m x 3.9m	
Hangar with support for 2	2,400 (excluding hangar)	137 sq m	
Payload (2)	771		
Fuel (2)	14,528		
Command & Control Systems (antennas not included)			
LINK 16 (CDLMS & JTIDS)	1,624	4.2 sq m	10.5 kW
AN/USG-2(V) CEC (Receive only)	1,600	5.4 sq m	17.1 kW

Industry Guidance (Modules)

- **Manned Aviation – MH-60R/S**
- **Unmanned Aerial Vehicles – VT-UAV Firescout**
- **Unmanned Surface Vehicles – Remote Minehunting System (RMS, AN/WLD-1(V) and Spartan)**
- **Unmanned Underwater Vehicles – Long Term Mine Reconnaissance System (LMRS)**

Industry Guidance (Modules)

System/vehicle	System/Vehicle weight (kg)	System/Vehicle Dimensions	Power Requirements
Manned Aviation Systems			
MH 60R (based on MH 60S, each folded)	10,660	13.1m x 3.37m x 4.07m	45 kW
Hangar with support for 1	11,000 (excluding hangar)	100 sq m	
Payload	381		
Fuel	54,341		
Unmanned Aerial Vehicles (UAVs)			
VT-UAV Firescout (each folded)	1,157	7.6m x 1.75m x 2.87m	5kW 28 V DC starting
Hangar plus support for 3	900 (excluding hangar)	100 sq m	
Payload (3)	272		
Fuel (3)	9,080		
Unmanned Surface Vehicles (USVs)			
Remote Minehunting System (RMS) AN/WLD-1(V)1	5,829	7.6m x1.75m x 2.87m	Load- 66 kW, 450 Amps for .8sec start up
Existing RMS Handling (potential starting point for RMS and/or other USV, UUV)	10,954	23.7 sq m	
Support	3,960		
Payload	454		
Fuel	6,810		
SPARTAN USV (based on 11 meter RHIB)	9,979	11.0m x 3.7m x 2.44m	16 kW
Launch, recovery, stow (est.)	9,979	60 sq m	
Support (est.)	5,100		
Payload	2,270		
Fuel	9,080		
Unmanned Underwater Vehicles (UUVs)			
LMRS (Long-term Mine Recon. System) each	1,225	6.1m x 0.5m x0.5m	5 kW
Launch, recovery, stow (sub)	1,905	8.9 sq m	
Support for (2)	2,948		
Payload (2)	136		
Fuel (2)	Battery powered		